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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR                | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|--|-------------|-------------------------------------|----------------------|------------------|
| 10/810,477   | 03/26/2004  | John F. Cooper                      | IL-11267             | 9778             |
| 7590<br>Ann M. Lee<br>Assistant Laboratory Counsel<br>Lawrence Livermore National Laboratory<br>P.O. Box 808, L-703<br>Livermore, CA 94551 |             | EXAMINER<br>CHUO, TONY SHENG HSIANG |                      |                  |
|  |             | ART UNIT                            | PAPER NUMBER<br>1745 |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE   |             | MAIL DATE                           | DELIVERY MODE        |                  |
| 3 MONTHS   |             | 01/05/2007                          | PAPER                |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|------------------------------|------------------------|---------------------|--|
|                              | 10/810,477             | COOPER ET AL.       |  |
| Examiner                     | Art Unit               |                     |  |
| Tony Chuo                    | 1745                   |                     |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 16 October 2006.

2a)  This action is FINAL.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-6 and 8 is/are pending in the application.  
4a) Of the above claim(s) 6 and 8 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-5 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 26 March 2004 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. \_\_\_\_ .  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/8/06. 5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_ .

***Response to Amendment***

1. Claims 1-6 and 8 are currently pending. Claims 6 and 8 are withdrawn from consideration as being drawn to a non-elected invention. Claims 7 and 9-11 have been cancelled. The 112 rejection of claim 5 is withdrawn. The amended claim 1 does not overcome the previously stated 103 rejection. Claims 1-5 are rejected under the following 112, 102, and 103 rejections. This action is made FINAL as necessitated by the IDS.

***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 8/8/06 was filed on 8/8/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-5 recites the limitation "carbon anode" in line 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Petricevic et al ("Planar fibre reinforced carbon aerogel for application in PEM fuel cells", Carbon, vol. 39, no. 6, May 2001, pg. 857-867). The Petricevic reference discloses a process of making an electrode for a fuel cell comprising: providing a solution of organic precursor aerogel that includes resorcinol and formaldehyde; adding a ceramic fibre or carbon fibre to the precursor to form a precursor mixture; gelling the precursor mixture; drying the composite gel in air; and pyrolyzing the composite gel to form an aerogel/carbon composite (See Experimental).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaschmitter et al (US 5789338) in view of Boes et al (US 5807494). The Kaschmitter reference teaches a process of making a rigid anode monolith comprising: providing a solution of organic aerogel or xerogel precursors including a phenol, resorcinol, or catechol and formaldehyde; gelling the precursor mixture to form a composite gel; drying the composite gel; and pyrolyzing the composite gel to form an aerogel/carbon

composite or a xerogel/carbon composite (See column 8, line 1 to column 9, line 27). In addition, it also teaches a drying step by either supercritical extraction to form an aerogel or air drying to form a xerogel (See column 8, lines 45-52). However, the reference does not expressly teach adding ceramic materials selected from the group consisting of silica, alumino silicates, and ash; glassy materials based on borates, phosphates, or silicates with alkaline earth or transition metal cations; or carbon materials selected from the group consisting of carbon fibers, carbon paper, carbon rods, carbon fabrics, carbon screens, graphite or highly graphitized carbon structures. The Boes reference does teach adding a carbonaceous component selected from the group consisting of carbon fibers and graphitic carbons and a silica solution to the precursor solution to form a precursor mixture (See column 3, lines 37-42 and column 13, lines 41-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kaschmitter organic aerogel/xerogel precursors to include a carbonaceous component selected from the group consisting of carbon fibers and graphitic carbons and a silica solution in order to improve the performance properties of the electrode by lowering the dielectric constant.

#### ***Response to Arguments***

9. Applicant's arguments filed 10/16/06 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that

any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Further, the motivation to combine the cited references does come from the Boes reference (See column 1, line 33 and column 8, lines 28-30).

The applicant argues that adding carbon black to the gel without its first reaction with one of Boes' cross linkers doesn't improve properties of the gel. The examiner disagrees because the Boes reference discloses production of gel compositions which contain an unmodified carbon black component "CB-A" along with silica to form a precursor mixture prior to gelation (See Example 6). This process of adding the ceramic materials and carbon materials prior to gelling the precursor mixture is the same as applicant's process. In addition, since claims 1-5 are construed as product-by-process claims, as long as the final product contains ceramic materials and carbon materials, this limitation is still met by the Boes reference. Further, the Boes reference also discloses "when the amount of CB-A varied from 10 to 20%, the wet gels were noticeably stronger" (See column 13, lines 13-14). Therefore, the Kaschmitter carbon electrodes as modified by Boes et al would result in a rigid anode monolith that is reinforced by the addition ceramic materials and carbon materials.

***Conclusion***

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 8/8/06 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC



DAH-WEI YUAN  
PRIMARY EXAMINER